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Aus dem Institut für Unfallmedizin (Vorsteher: P.D. Dr. H. Nigst) und
der Chirurgischen Universitätsklinik Basel
(Vorsteher: Prof. R. Nissen)

Dislocation of the Acromio-Clavicular Joint

Inaugural-Dissertation
zur Erlangung der Doktorwürde der Medizinischen Fakultät
der Universität Basel

vorgelegt von
Frank X. Pedlow
von New York, USA

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Introduction

The aim of this paper is to evaluate the treatment, both conservative and surgical, of subluxation and luxation of the acromio-clavicular joint in patients treated at the Department of surgery of the Medical Faculty, Basel, Switzerland, from 1950 to 1959.

Usadel (1940) reports an average of 2.4 cases of clavicular dislocation a year in the Heidelberger clinic from 1919 to 1926, and from 1927 to 1939, 6.5 cases a year. *Millbourn*[25] (1950) found the annual incidence to be fairly constant in Lund, Sweden, from 1937 to 1946. From 1940 to 1955, *Arner, Sandahl and Ohrling*[1] (1957) found in Stockholm, an average of 3 to 5 cases a year.

Anatomy

Distinction is made between subluxation and luxation. Subluxation of the acromio-clavicular joint refers to the disruption of the actual intra-articular joint surfaces which are connected by the weak acromio-clavicular ligament of the capsule. The variations of this joint have been shown by *Urist*[45] (1940) in roentgenological examinations of one hundred healthy persons. He shows that normally the clavicle overrides the acromion to a limited extent in 49% of his cases. It has also been found that an intra-articular meniscus is present in 30 to 40% of all acromio-clavicular joints. *Berbrayer*[4] (1958) reports a post-traumatic cyst of one of the intra-articular discs of the acromio-clavicular joint.

The other stronger, extra-articular part of the acromio-clavicular joint, includes the trapezoid and conoid ligaments connecting the clavicle to the coracoid process. The conoid ligament prevents posterior displacement of the clavicle, whereas the trapezoid ligament restricts anterior displacement of the clavicle. Separation of these ligaments together with the separation of the acromio-clavicular joint ligament is the picture presented by luxation. The displacement is usually superior, and in rare instances posterior or anterior (*Hintermayer*[18], 1909; *Dohn*[15], 1956). Between both ligaments lies a bursa which, when the ligaments are short enough, directly separates the clavicle and coracoid process. This can lead to the formation of a coraco-clavicular joint. *Moore and Renner*[26] (1957) and *Nutter*[32] (1941) have reported such cases.

Mechanism of Injury

Both subluxation and luxation of the acromio-clavicular joint come about by direct injury to the shoulder. They are very seldom caused by pressure due to fall on the extended hand.

Symptomatology

Patients complain mainly of the inability to raise their arm to the horizontal position. In so lifting the arm, the shoulder joint is enlarged. Consequently, the acromion is displaced superiorly and, this in turn, induces pain (*Lanz and Wachsmuth*[22], 1935). Direct pressure pain, step formation in the acromio-clavicular joint and the Piano Key phenomenon ("Klaviertastenphänomen") are important clinical signs. The Piano Key phenomenon is positive when one exerts pressure with one finger on the clavicle and upon releasing it, the clavicle springs up again to an abnormal elevation. This elevation is due to the pull exerted by the trapezoid and sterno-cleido muscles. Also, the weight of the shoulder pulling the scapula down, causes the acromion process to lie slightly below the clavicle. The Piano Key phenomenon is sometimes missing in subluxation, but never in luxation. Even when the x-ray shows no great displacement, slight Piano Key phenomenon demands specific treatment.

The most important differential diagnosis to acromio-clavicular dislocation is shoulder luxation. Other conditions which come into consideration are arthrosis deformans, tear of the biceps tendons, caries sicca and Duplay's syndrome; all of which may appear for the first time posttraumatically. Radiated pain to the shoulder (scalenus syndrome, myocardial infarct, cervical rib, etc.) plays a lesser role. Distinction has to be made from arthrotic senile changes or from pathological changes due to previous injuries.

Recommended Treatment

Conservative treatment is the generally accepted therapy for subluxations. However, a difference of opinion exists as to whether surgical or conservative treatment is the better for luxations.

Conservative therapy attempts to establish a smooth articulating surface thus allowing the body to reestablish the continuity and strength of the torn ligaments. Many types of bandages are in use including the Pelotte (sponge rubber placed directly over the clavicle and taped down with adhesive tape), Desault, Velpeau, Figure Eight ("Rucksack"), Abduction Splint with or without plaster of Paris, and the latest in Europe the Watson-Jones' bandage (1955).

The Watson-Jones' bandage consists of adhesive tape which passes over the shoulder, crosses the supra-scapular triangle as close to the base

of the neck as possible, and then covers the flexed elbow. A piece of sponge rubber is placed underneath the adhesive tape directly over the clavicle thereby increasing the pressure at this point. The arm is held in a simple sling. Wide lateral application of the adhesive tape is undesirable since it also pushes down on the acromion. The important feature of the Watson-Jones' bandage is that it not only applies direct downward pressure on the clavicle, but at the same time raises the arm and scapula allowing for the more successful alignment of the acromio-clavicular joint surfaces. Exact reposition and immobility of the joint is, as always, necessary for this bandage.

The main disadvantage of this bandage is a contact eczema or folliculitis occurring as a reaction to the adhesive tape. *Stubbins and McGaw*[43] (1959) report two cases of temporary ulnar paralysis resulting from elbow straps. The last major series using Watson-Jones' bandages was reported by *Arner, Sandahl and Ohrling*[1] (1957).

Of paramount importance for any type of conservative treatment is immediate fixation, and controls every few days.

The principle disadvantage of the Velpeau and Desault bandages is the shoulder stiffness which may appear afterwards. The Pelotte permits too much movement of the shoulder, thereby preventing immobilization which is necessary for healing.

The Suspension cast (*Barnard*, 1939; *Wolin*[47], 1944; *Stubbins and McGaw*[43], 1959) has not been used at this hospital. This method of fixation applies direct pressure to the clavicle, through straps connected to a plaster of Paris cast which surround the thorax. On the injured side, the cast lies in the axilla which gives support to the scapula. During the day the weight of the cast pulls down on the clavicle. At night, when the patient lies down, he tightens the adjustable strap. This form of therapy eliminates total shoulder immobilization if the patient is intelligent enough to adjust the straps when necessary. Clothes may be worn comfortably and it eliminates the necessity of changing loose bandages. The length of treatment is said to be five to six weeks. *Stubbins and McGaw*[43] (1959) report excellent results in eighteen cases.

Conservative treatment is considered by some to be too unreliable (*De Palma*[13], 1959), the chief obstacles being the interposition of the meniscus, a frayed capsular ligament or flakes of articular cartilage (*Campbell*[9], 1949).

Should redislocation with abnormal mobility of the acromio-clavicular joint occur after three weeks of immobilization, surgical measures may be considered (*Arner, Sandahl and Ohrling*[1], 1957; *Nigst*[31]). Fixation of the clavicle can be either intra-articular or extra-articular or a combination of both. Intra-articular fixation alone with the aid of wire screws or pegs, prevents the rotation of the clavicle through its long axis, thereby limiting the elevation of the arm (*Inman, Saunders and Abbott*[19], 1944). Extra-articular methods include the fixation of the clavicle to the coracoid process. This may be accomplished with wires (cause lytic defects), screws (prevent clavicular rotation), and with transplanted tissues (fascia, ligaments).

In *Bunnell*'s fascia graft (1928), holes are bored in the clavicle and in the acromion and then the two are tied together with a strip of fascia. This fascia is too bulky to fit in the tight subacromical space, increasing post-operative shoulder stiffness (*Campbell*[9], 1949). Henry's technic (*Campbell*[9], 1949), in which fascia lata is placed beneath the base of the coracoid process and extended up over the clavicle beneath its periostium and the acromio-clavicular joint is connected with stainless wire, may also cause lytic defects and the fascia is subject to necrosis.

A combination of both methods, whereby the acromio-clavicular joint is fixed with a threaded wire and the conoid and trapezoid ligaments are sewn together to their former attachments, is a third possibility (*Nigst*[31]). This wiring is left only for a short time allowing the extra-articular ligaments to reunite. Some authors are of the opinion that the advantages of the sewing together of these two ligaments are not so great (*Watson-Jones*[47], 1955; *De Palma*[13], 1959).

The organization and fibrosis of the extra-capsular ligaments may lead to calcification or ossification which may be found as early as three to five weeks after the trauma. *Millbourn*[25] (1950) noted calcification in 14 out of 16 cases; *Usadel*[44] (1940) in 62 out of 109 cases; *Urist*[45] (1946) in 18 out of 41 cases; *Arner, Sandahl and Ohrling*[1] (1957) in 22 out of 33 cases.

Care is taken that both ends of the wire are directed upward to prevent wandering of the wire. Cases have been reported where such wires have penetrated the lung (*Mazet*[24], 1943).

In patients where the surgical treatment fails and arthrotic changes cause pain, resection of the lateral third of the clavicle has proved to be an appropriate form of therapy, and the cosmetic effect is excellent. The first resection was done by *Morrow*[28]. *Sievers*[42] (1914) established the resection as accepted therapy. *Graham*[17] (1957) describes a case where he performed an acromionectomy in an arthrotic joint with favorable results.

Present Investigation

Materials and Methods

In the University Surgical Clinic and Policlinic, Basel, Switzerland, during the period from 1950 to 1959, 134 cases of acromio-clavicular dislocations were treated. Since 1954, the average has been 20 cases a year. Of these 134 cases, 55 have been revaluated. The other 79 patients could not be found, died or did not wish to return to the clinic for examination.

To evaluate the results of treatment, both subjective and objective aspects were considered. We inquired for pressure pain, pain on general movement, pain upon lifting the shoulder, crepitation sensations or discomfort during change of atmospheric conditions.

Changes on physical examination were noted. The patients were examined for step formation, clinical presence of luxation, Piano Key phenom-

enon, muscle atrophy and loss of power in their shoulders. The shoulder mobility was examined through anterior and lateral abduction (180 degrees), inward rotation (80 degrees), outward rotation (30 degrees) and the thumb vertebrae distance test. The extent of reduction of mobility greatly influenced the clinical evaluations of the treatment received (the classification of *Arner, Sandahl and Ohrling*[1], 1957, is used). Those patients who were asymptomatic and had normal mobility were regarded as "excellent". Slight restriction in movement or insignificant discomfort was noted as a "good" result. Marked restriction in mobility was considered a "poor" result.

Each patient was examined roentgenologically. A comparison exposure was taken so that both acromio-clavicular joints appeared on the same film. These were compared with the films taken at the time of the injury. The presence of continued luxation or subluxation, osteophyte formation, calcification in the acromio-clavicular capsule or conoid-trapezoid ligaments and arthrotic changes were noted.

We have observed that about 50% (29 out of 55) of the cases available for re-evaluation had injuries which were related to traffic incidents including bicycle, motorcycle and auto accidents. Other causes included gymnastics, football, boxing and falls from heights. Of our cases 32% were combined with other injuries which indicates that acromio-clavicular joint dislocations commonly occur in combination with violent accidents. The average age of our patients was 41.1 years. Only 5 of the patients were women. In the series 17 were subluxations and 38 were complete luxations. In each instance, verification was made through x-ray.

Treatment

Since this review includes cases over a period of 9 years, there are many variations in the forms of therapy used (see table I page 11). The emphasis in primary conservative treatment in our clinic commenced in 1953. During the years 1953 to 1959, the types of this conservative treatment varied.

Pelotte Series

Eight patients who exhibited subluxations were treated with a Pelotte (sponge rubber placed directly over the clavicle and taped down with adhesive tape). This bandage was left on for a period of one to three weeks. Among these 8 subluxations, two patients sustained additional injuries. Included in these were a fissure in the tuberculum majus of the humerus on the same side as the injured joint and a concussion as well as a luxation of the sterno-clavicular joint. In the convalescence period of the latter patient a scalenus syndrome was diagnosed.

As primary complications, one of the patients had a reluxation (complicated injury of sterno-clavicular luxation referred to above), and 3

others exhibited contact eczemas from the adhesive tape which had no ill effect on the firmness of the strapping.

Six patients who exhibited luxations were treated with a Pelotte. This bandage was left on for a period of two to five weeks. Among these 6 luxations, 3 patients sustained additional injuries. Included in these were 3 concussions (one of these patients also suffered rib and scapula fractures). Two patients had reluxations and two others exhibited contact eczemas during their convalescence period.

Follow up x-ray findings in this series are found in table II.

In the evaluation of time lost from work, the cases with accompanying injuries can not be considered. Excluding these, the time lost by patients with subluxations was between 3 and 4 weeks and for luxations between 5 and 6 weeks. The evaluation of the clinical results in this series of 14 cases was:

Subluxations – 5 excellent – 3 good – none poor
Luxations – 2 excellent – 2 good – 2 poor

Velpeau-Desault Series

Distinction between the Velpeau and Desault bandages is not made in this review because, unfortunately, many use these terms interchangeably. These bandages were used in combination with a Pelotte. The Velpeau-Desault was left on for a period of a few days to two weeks, after which time the Pelotte remained another two weeks. Three subluxations and 3 luxations were so treated. One subluxated clavicle was also fractured. Among the luxations, one patient exhibited an eczema, another showed reluxation during the convalescence period. The time lost from work was between 3 and 4 weeks for subluxations and between 6 and 7 weeks for luxations. Follow up x-ray findings for this series are found in table II. The evaluation of clinical results was:

Subluxations – 2 excellent – 1 good – none poor
Luxations – 2 excellent – 1 good – none poor

Watson-Jones Series

The use of the Watson-Jones' bandage first came into practice in this clinic in 1956. Among the subluxations, the Watson-Jones' bandage was applied 6 times. Five of these patients sustained other injuries. Included in these were multiple rib fractures and a fractured skull. Three of the subluxation cases exhibited contact eczemas which decreased the firmness of the bandage.

A comparison of two subluxations presented interesting findings. One had suffered a previous, undiagnosed injury to the same shoulder a year prior to the second injury. A Watson-Jones' bandage was applied for two weeks. X-ray findings showed arthrotic changes in the acromio-clavicular

joint. The clinical evaluation of this case was good and not excellent as might have been the case had the primary injury not occurred. The other subluxation patient showed a negative x-ray at the time of examination. In this case, a simple Pelotte bandage was applied. During his convalescence a folliculitis appeared. He lost 7 weeks from work. On x-ray examination, two years after the injury, arthrotic changes and subluxation were noted. The clinical evaluation of this case also was only good.

Nine patients with luxations were treated with the Watson-Jones' bandage. One of those who received this bandage had it replaced, after three weeks, with an abduction splint. The latter suffered from an habitual shoulder luxation. As a result of his accident, he also fractured the luxated clavicle. The clinical evaluation here was poor.

Complicated injuries observed under the luxations were a clavicle fracture with habitual shoulder luxation (referred to above) and a concussion. One other patient had a luxated shoulder as a child. Contact eczemas in those patients with luxations, treated with Watson-Jones' bandages, was observed only once. This patient was operated upon. A cerclage was inserted, after which an infection set in. The time lost here was 9 weeks, and in spite of the complications, the clinical results were excellent. Excluding the complicated injuries the time lost for subluxations was between 3 and 4 weeks and for luxations between 5 and 6 weeks. Follow up x-rays showed continuing subluxations in 3 of the original cases. Two of these patients demonstrated eczemas and the other had multiple rib fractures. Osteophyte formation was found in 2 cases, calcification in 1 and definite arthrotic changes in 3.

Among the luxations, 6 patients continued to show dislocations (3 subluxations – 3 luxations). Of the subluxations, one of the patients suffered a shoulder luxation as a child (referred to above). The clinical evaluation was good. Among the 3 who continued to have luxations, 2 exhibited eczemas and, in addition, one had an infection post-operatively. Osteophyte formation was found in 6 cases, calcification in 5 (massive in the post-operatively infected cerclage) and arthrotic changes in 2.

Clinical evaluation of the Watson-Jones series of 15 cases was:

Subluxations – 3 excellent – 3 good – 0 poor
Luxations – 2 excellent – 5 good – 2 poor

Abduction Splint Series

The abduction splint was also used in combination with an underlying Pelotte. None of the subluxations were so treated. Eight patients with luxations received an abduction splint with a Pelotte. The splint was applied for a period of a few days to four weeks (with clavicle fracture), after which time the patient continued to wear a Pelotte for a week. Among these 8 cases, 3 clavicle fractures were also diagnosed. One patient also suffered a vertebral dislocation (time lost 1 year). No contact eczemas were noted. The time lost from work, excluding those with other injuries,

was between 4 and 5 weeks. Follow up x-ray findings are found in table II. The evaluation of the clinical results was:

Luxations – 7 excellent – 1 good – 0 poor

Surgical Series

The operative procedure practiced in this clinic also varied during the years 1950 to 1959. Of those patients who were operated upon, 12 returned for re-examination.

In 6 cases where luxations were diagnosed, percutaneous wiring of the acromio-clavicular joint with sewing of the capsular ligament was performed. These operations were carried out during the years 1950 to 1953. Primary complications to be noted were tissue necrosis (a sclerosing agent was injected at the operation), and a Sudeck atrophy (results in both cases were evaluated as poor). Follow up x-rays showed subluxation in 2 cases. One patient, who also suffered an acromion fracture, developed a synostosis of the secondarily subluxated acromio-clavicular joint. Arthrosis was noted in 2 cases, osteophyte formation in 2 cases, and calcification in 3. The evaluation of the clinical results in this series of 6 cases was: 1 excellent – 3 good – 2 poor.

Included in this review are 2 patients where open reduction was performed. This involves exposing the acromio-clavicular joint and the coraco-clavicular ligaments. If these ligaments (conoid and trapezoid) are severed, they are sewn with chromated catgut or silk. A Kirschner wire is inserted between the acromion and the clavicle and then turned up on one end to prevent displacement. The acromio-clavicular capsular ligament is also repaired. The Kirschner wire is left in for one month. During the first weeks, the patient wears an abduction splint. After the removal of the splint, intensive physical therapy is carried out. Unfortunately, only these 2 patients of all those who were so treated returned for re-examination.

The clinical results were one good and one poor.

A "cerclage" of the acromio-clavicular joint was performed once. The cerclage was inserted after a Pelotte induced eczema. During the post-operative recovery, the operation site became infected. Upon re-examination, massive calcification of the capsular ligaments was noted. In spite of all these complications, the evaluation was excellent. The patient lost 9 weeks from work. Definite arthrotic changes were seen on her x-ray film.

Henry's technic (a "cerclage" of the coracoid process and clavicle) was carried out once. On re-examination the wire was found broken in two places. This individual (68 years) lost 9 months from work. X-ray signs of arthrotic alteration were seen. The clinical evaluation of this case was excellent.

The resection of the lateral third of the clavicle was carried out in 5 patients. Unfortunately, only 2 of these patients returned for re-

Table I

Results	Subluxations (17)				Luxations (38)					
	Conservative				Conservative				Surgical	
	Pelotte	Velpeau	Abduct. splint	Watson Jones	Pelotte	Velpeau	Abduct. splint	Watson Jones	Oper.	Resect.
Excell.	5	2	0	3	2	2	7	2	3	2
Good	3	1	0	3	2	1	1	5	4	0
Poor	0	0	0	0	2	0	0	2	3	0
Total	8	3	0	6	6	3	8	9	10	2

Table II

X-Ray Findings

X-ray	Subluxations				Luxations					
	Conservative				Conservative				Surgical	
	Pelotte	Velpeau	Abduct. splint	Watson Jones	Pelotte	Velpeau	Abduct. splint	Watson Jones	Oper.	Resect.
Luxation	0	0	0	0	3	1	4	3	1	1
Subluxation	0	0	0	3	1	1	0	3	4	0
Osteophyte formation	1	0	0	2	1	2	4	6	5	1
Arthrosis	2	0	0	3	2	1	3	2	7	0
Ligament calcification	1	0	0	0	2	1	0	2	5	1
Capsule calcification	0	1	0	1	1	1	3	3	2	0

examination. One man injured his shoulder in 1952, at which time he received no active treatment. In 1958 he was involved in an automobile accident, luxating his acromio-clavicular joint. The lateral third was resected. One year post-operatively, he did not complain of any distress. Mobility was full and the cosmetic results were excellent in both cases where resection was performed.

Discussion and Conclusions

An attempt is made in this work to compare conservative and surgical treatment of the acromio-clavicular dislocations. Sharp distinction is made between subluxations and luxations. Various types of treatment were used during the period of the time considered. Primary surgical fixation was the treatment of choice during the years 1950 to 1953. Conservative treatment took precedence over surgical treatment in the year 1953 with the use of abduction splints and Desault-Velpeau bandages. Since the introduction of the Watson-Jones' bandage in this hospital (1956), it has been the main instrument of therapy.

Subluxations

Surgical Treatment: No author in the literature has proposed surgical treatment for subluxations.

Conservative Treatment: Conservative therapy consisting of a pressure bandage and a sling may be sufficient in most cases. The ideal bandage of this type is in our opinion the one used by Watson-Jones. *Arner, Sandahl and Ohrling*[1] (1957) report 9 excellent and 2 good results out of 11 patients who used the Watson-Jones' bandage. In this review, which includes 17 subluxations, many technics were used (refer to table I). The evaluation of our results was 10 cases excellent and 7 cases good. The failure of the Watson-Jones' bandage to achieve better results in our series is attributed to:

1. Improper application of bandage – Wide lateral application of the bandage pushes down on the acromion.
2. Failure to check the bandage frequently, at least every 3 to 4 days. – During their convalescence, many patients were left in the hands of their family doctors who, since they see few acromio-clavicular dislocations, may have overlooked a loose bandage.
3. Complicated injuries – In patients receiving other injuries, the acromio-clavicular dislocation might have been neglected.
4. Previous injuries – Patients who suffered previous acromio-clavicular dislocations or other shoulder injuries (habitual shoulder luxation) have a poorer prognosis.
5. Skin reactions – Eczema, folliculitis sometimes follow the use of adhesive tape. Patients should be asked if their skin is sensitive to the

usual adhesive tape and, if so, the use of a special kind of adhesive, a Velpeau bandage or an abduction splint should be considered.

6. Lack of healing power in older patients – Conservative therapy shows poorer results in patients over 40 years old.

7. Interposition of soft parts into the joint space prevents accurate reposition. Surgical exploration may be considered.

Luxations

Surgical Treatment: Primary surgical reposition and fixation is advised by some authors (*De Palma*[13], 1959; *Schulte*[39], 1956). *Campbell*[9] (1949) advises surgical reposition if the bones reluxate after three weeks of conservative therapy. *Arner, Sandahl and Ohrling*[1] (1957), out of sixteen cases treated surgically (coraco-clavicular wiring), report excellent results in 6 cases, good results in 7 and poor results in 3 cases. This procedure was performed once in this hospital with excellent results.

The series reported by this author includes 10 luxations that were operated upon by various methods. The results noted were: 3 excellent; 4 good; 3 poor. Osteophyte formation or arthrotic changes were found in more than 50 % of these cases. These changes influenced the mobility and discomfort in the patients' shoulders. In some cases the arthrotic clavicular part may have to be resected. The resection has no disadvantages. Perhaps the extra-clavicular fixation (performed once in this hospital) may prevent arthrotic changes from occurring. Primary surgical fixation as practiced here involves long periods of rehabilitation (2 to 3 months) and subjects the patient to another operation (resection) if severe arthrotic changes cause restriction of shoulder movement.

Conservative Treatment: the latest report on the use of the Watson-Jones' bandage is by *Arner, Sandahl and Ohrling*[1] (1957). In their series of 17 luxations, 9 cases were reportet as excellent, 3 as good and 2 as poor. In the series reported in this paper, 9 patients received a Watson-Jones' bandage. The results were evaluated as follows: 2 excellent; 5 good; and 2 poor. The failure of the Watson-Jones' bandage to receive better results may be attributed to factors listed previously.

According to these findings it is apparent that conservative treatment is justified when handling acromio-clavicular dislocations. Any type of pressure bandage which fixes the clavicle in place, immobilizes the arm and exerts upward pressure on the acromion is suggested. The best bandage of this type is probably the Watson-Jones' bandage, when applied in the correct manner.

In those cases where no radiological findings are present, yet the clinical signs of dislocation can be elicited, the specific therapy should be started just the same. The fact that the clavicle can normally override the acromion should be considered.

If the bones reluxate during this conservative therapy, resection of the lateral third of the clavicle can be considered. Primary resection in patients over 40 years reduces the time lost from work and has no dis-

advantages, whereas acromio-clavicular wiring increases arthrotic conditions. Where patients have any loss of shoulder function, massive arthrotic alterations can be seen.

Summary

The literature on subluxation and luxation of the acromio-clavicular joint, and the treatment of these conditions, is reviewed. The findings from a series of 55 patients, re-examined after 1 to 9 years, is reported.

The author's series comprises 17 cases of subluxation of the acromio-clavicular joint, all treated conservatively. End results were good or excellent in all cases whatever method was used.

Luxation of the acromio-clavicular joint was present in 38 cases. Of these, 26 were treated conservatively. The end results were excellent in 13 cases, good in 9 cases and poor in 4. One patient, whose evaluation was poor, suffered from habitual luxation of the shoulder. The remaining 12 patients underwent operations. In 2 luxations the acromion and clavicle were temporarily fixed with a Kirschner wire, and the coraco-clavicular ligaments were reunited with either catgut or silk. The results were rated one good and one poor. In 6 luxations a percutan wiring of the acromio-clavicular joint and sewing of the capsule was performed. The clinical results were: 1 excellent – 3 good – 2 poor. Cerclages were inserted twice with excellent results.

The lateral third of the clavicle was resected in 2 patients with excellent results.

The value of conservative therapy is stressed and suggestions are offered for the treatment of these injuries.

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